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### **Abstract**

This study provides an economic analysis of the post-War institutions of the European tenancy markets. Two representative types of market interventions are analyzed: the introduction of compulsory terms in the tenancy contracts and rent control. First of all this study offers a description and an analysis of the recent history of those institutions. The cases of Spain (as a benchmark), Italy, Finland and UK are analyzed more in depth, as examples of "big reformers" during the 20th century, in order to extract some general conclusions about the evolution of the European institutions in the last decades. Then the effects of those interventions are theoretically explored by adapting a model of tenancy markets (Basu and Emerson, 2000). The results show that the analyzed institutions potentially entail negative effects for the European tenancy markets. Those effects are consistent with the tendencies observed during the second half of the 20th century in the different European markets.

**Keywords:** Rent control; institutions; tenancy contracts; compulsory terms.

**JEL Classification:** N4; K12; L51; R31; O47.

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# The institutions of house tenancy markets in post-war Western Europe: An economic analysis

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June 10, 2008

## Abstract

This study provides an economic analysis of the post-War institutions of the European tenancy markets. Two representative types of market interventions are analyzed: the introduction of compulsory terms in the tenancy contracts and rent control. First of all this study offers a description and an analysis of the recent history of those institutions. The cases of Spain (as a benchmark), Italy, Finland and UK are analyzed more in depth, as examples of "big reformers" during the 20th century, in order to extract some general conclusions about the evolution of the European institutions in the last decades. Then the effects of those interventions are theoretically explored by adapting a model of tenancy markets (Basu and Emerson, 2000). The results show that the analyzed institutions potentially entail negative effects for the European tenancy markets. Those effects are consistent with the tendencies observed during the second half of the 20th century in the different european markets.

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# 1 INTRODUCTION

In several European countries the weight of the tenancy market relative to the total stock of housing has diminished over the 20th century. Figure 1 shows, from census databases and public data from the different National Central Banks, recent data for 12 European countries. This downward trend of the tenancy markets has not been accompanied by a parallel growth in empty residences.

Several explanations could be provided to explain that general trend, ranging from the finance literature that takes housing as an investment good, to the more general housing economics literature that also takes housing as a consumption good (Henderson and Ionnides, 1983 and Rosen et al. 1984 for some early references). In general, market regulations and institutions are usually neglected in more broad economic studies.

In more specific literature that takes into account the market regulations, a weak tenancy market and a diminishing rate of tenancy, relative to property, is related, among other factors, to rent control policies and similar restrictions. The basic microeconomic intuition that relates a rent ceiling with a diminishing quantity and quality of the residences in the tenancy market has been found in different empirical analysis in different markets (from Johnson, 1951 to Sims 2007). In fact, there seems to be consensus among economists about the effects of rent control (Alston et al., 1992). The analysis carried out in several theoretical models also point to the same conclusions (e.g., Basu and Emerson, 2000, Raess and Ungern-Sternberg, 2002, Basu and Emerson 2003).

However, most of the research on rent control has studied the type of market intervention enforced in cities or States of the United States of America (for a summary, Turner and Malpezzi, 2003). In contrast, less work has been done about the specific effects of the European type of tenancy restrictions. Exceptions to that are Peña and Ruiz-Castillo (1984) for Spain, Munch and Svarer (2002) for Denmark or Lyytikäinen (2006) for Finland. However, the focus of those studies is not the analysis of the design of the institutions itself.

The restrictions in force in the different European countries (such as rent control and compulsory terms) may have had an effect on the general diminishing trend of the tenancy figures. At the same time partially liberalizing measures, like the ones applied in UK (England and Wales) and Finland may have had the opposite effects. See Figure 2 for the partial reforms applied in 1989 in the United Kingdom (UK Housing Act 1988) and in 1992 and 1995, with dotted lines, for the case of Finland (where tenancy was partially decontrolled in 1992 and fully in 1995). In UK the rate at which the tenancy market was diminishing in the 80's seems to have slowed down after the introduction of partially liberalizing measures, and in Finland the share of rented dwellings seems to have increased significantly since the 80's.

The aim of this study is to analyze the regulatory institutions specifically directed to the tenancy markets in Europe and to provide an analysis of its economic implications. It must be highlighted that there have been other important factors affecting the tenancy markets over the same period, as improvements in access to credit, development of the financial markets, changes in fiscal regimes, etc. Therefore, it must be recognized that any changes in the tenancy markets in Europe might be only partially caused by changes in the specific regulatory institutions affecting the market. The structure of this paper proceeds as follows: first, I identify the most typical institutions of the European tenancy contracts by analyzing legislation in different countries (section 2). Second, I introduce those interventions in a model of tenancy markets to theoretically test for their effects. For that purpose an adapted version of the model of Basu and Emerson (2000) is used (section 3). Finally, some conclusions linking the institutions with the results of the model are provided (section 4).

## 2 THE INSTITUTIONS IN THE EUROPEAN TENANCY MARKETS

Tenancy is still today heavily regulated in Europe. At the beginning of the 20th century tenancy was not so heavily regulated and the "contractual freedom" inspired the contents of the tenancy contracts following the principle of "autonomy" of the private parties<sup>1</sup> (Rodríguez-Aguilera and Peré, 1965).

During the 20th century the "contractual freedom" was restricted with the introduction of some tenancy regulations (rent ceilings, compulsory terms, control over the increase of the rent...). Some of these norms had the objective of improving the situation of the tenants in a context of flats shortage after the First or Second World War in several European countries or the Civil War in the case of Spain.

Limiting the analysis to one of those restrictions, control over the increase of the rent paid by the tenant, Arnott (1998) classifies the different types of rent control into "two generations". A "first generation" rent control would include rent freezes and exceptional upward adjustments. A "second generation" rent control would include automatic percentage rent increases linked to the rate of inflation (or similar indices). While in the United States the tenancy markets were gradually deregulated and very few cities maintained the controls after 1950, in Europe the first generation rent controls survived longer due to the long lasting effects of the Wars. Arnott (1998) identifies the surge of the second generation controls with the inflationary crisis of 1973. The old controls, as they

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<sup>1</sup>That is present, for instance, in the article 1255 of the Civil Code of Spain (1889) or the article 1322 of the Civil Code of Italy (1942). Those articles follow the French tradition, actually the article 1134 of the French Civil Code (1804).

did not allow for inflation correction, seemed too inefficient in a context of high inflation.

As already mentioned, rent control is only one of the interventions introduced in the European tenancy markets in the 20th century. Another main restriction can also be identified in the different European systems: compulsory terms as a way to temporarily protect the tenant against eviction. It is also possible to classify those restrictions by their severity: the protection could be permanent, therefore rendering the contract to the will of the tenant, or temporary (a protection given to the tenant for a few years time). The most recent regulations in the different European countries opt for the temporary solution (3 to 5 years).

The aim of this section is to offer an overview of the history of those interventions (rent control and compulsory terms). In the following sections a more detailed analysis is provided for Spain, as a benchmark, and Italy, UK and Finland as examples of countries that implemented some relevant reforms over the last decades. Finally, section 2.5 offers an overview of the most recent regulations for a multiplicity of European countries. The most recent regulations affecting the tenancy markets for all the countries analyzed are included in Table 1.

## 2.1 SPAIN

The tenancy market was not specially regulated in Spain before 1931. The general rules of contractual freedom were applicable into the tenancy market with the exception of some partial decrees limiting the length and rent of the tenancy contracts for specific cases and cities during the decade of 1920<sup>2</sup>. It must be highlighted that the Spanish Civil Code (1889), was mainly liberal and established in its article 1255 that the private parties were free to agree any terms and conditions in a contract as long as they were respectful with the "law, morality and public order".

In 1931<sup>3</sup> the restrictions to contractual freedom that were already introduced with the cited partial decrees became permanent. However, it is not possible to find a complete piece of regulation on tenancy markets until 1946, when the government of Franco passed the first "Ley de Arrendamientos Urbanos" (Urban Tenancy Act)<sup>4</sup>. Since then, a "Ley de Arrendamientos Urbanos" has been always in force in the Spanish economy (the first as said, from 1946, and later on, with the regulations of 1964, 1985 or the most recent one of 1994).

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<sup>2</sup>Royal Decree of 21 of June 1920. Its effects were extended by other Royal Decrees in 1921, 1922, 1923, 1924 and 1925.

<sup>3</sup>Decree of 29 December 1931.

<sup>4</sup>Law of 31 December 1946.

The introduction of restrictions to contractual freedom took place mainly as a reaction to the profound changes of the Spanish society before the Civil War such as the rural exodus to the big cities and, after 1936, the shortage of housing caused by the Civil War. In any case, more general populist reasons intervened in the initiatives as a way to gain support for the newly established political regimes (on one hand, the Spanish Second Republic, and after 1939, Franco's dictatorship).

The 1946 Law established a strict regulation over the tenancy contracts and made nearly inapplicable the liberal principles of the Civil Code. As Rodríguez-Aguilera and Peré (1965) noted, the new Law responded to a new "social sensitivity". That regulation introduced, among others, two important restrictions: "compulsory terms" and "regulated rents". At this stage, the interventions were severe. The protection against eviction for the tenant, that is, the compulsory term to be introduced in the contract, was unlimited. Even the close relatives of the tenant were able to succeed him as tenants in the same dwelling and with his same conditions. With respect to the rules governing the rents, the Law established fixed one-time increments in the rent paid for the flats rented before the end of the Civil War and froze the rents for the new contracts.

In 1964 the government passed a new Law through a new Decree<sup>5</sup>. Several amendments to the old legislation had been introduced in the previous decade (Laws of 22 December of 1955 among others), and it was necessary to publish a new legal text to rationalize and clarify the regulation. The new Law ruled the tenancy market until 1985 but it did not introduce significant changes in the rules governing the term of the contract (the indefinite extension of the term was still in force). On the other hand, a very timid change in the rules governing the rents was introduced. The new Law allowed to increment the rents in the contracts signed after 1956 after the fifth year of renewal. The increase was tied to an official index related to the "cost of life" published by the Instituto Nacional de Estadística (INE) (National Statistics Institute).

The statistical information available about the tenancy market is quite scarce, although it is reasonable to infer that during the period in which the regulations were in force the proportion of rented dwellings diminished. The census of 1970 showed that 30.1% of the main residences were rented in Spain while in 1981 that proportion had fallen to 20.8%. At the same time empty residences increased suggesting that the tenancy market was unable to attract new dwellings.

Public opinion increasingly perceived that those type of regulations were not having any positive impact on the housing market and that the situation was now quite different from that of the post-War period. As a consequence, in 1985, with the so-called "Decreto Boyer"<sup>6</sup>, the government took a relevant step to liberalize the tenancy market by eliminating the compulsory extensions for

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<sup>5</sup>Decree 4104/1964 of 24 December 1964.

<sup>6</sup>Royal Decree 2/1985 of 30 April 1985.

all tenancy contracts signed after its enactment. However, the rents were still tied to the consumer price index and the Decree was not applicable to all the contracts signed before 9th may 1985. Therefore its liberalizing measures did not apply to an important part of the tenancy market.

The measures taken aimed to revitalize the tenancy market but the figures of the censuses suggest that the effect of the new rules were quite limited: the census of 1991 show a further reduction in the weight of the tenancy market (15.2% of the main residences) although it can be said that the pace of reduction had also slowed down.

In 1994, the parliament enacted the most recent Urban Tenancies Act (Ley de Arrendamientos Urbanos 29/1994)<sup>7</sup>. Two objectives of the Law must be highlighted. First, it aimed to reduce the instability caused by the very short terms of the contracts that were signed under the Decreto Boyer and to fit the problem of the coexistence of very different types of contracts (the new contracts after 1985 and the "old" rigid and intervened contracts from before). For that, the Law of 1994 reintroduced compulsory terms for a limited period of 5 years. On the other hand, it maintained a rent control that tied the increments in the rent to the consumer price index (CPI). Finally it also included some rules for the contracts signed before 1985 (that were still regulated by the norms of 1964) in order to allow them to expire in the medium term.

This short historical survey shows that the two types of intervention that this paper aims to analyze were in force in Spain without interruption (with the exception of the "Decree Boyer") since 1931 (or 1946 if we only count for the Law level regulations). On the other hand, it is possible to identify an evolution from very severe interventions, like the rules of terms and rents of the Law of 1946, to milder interventions, as the ones passed with the Decree Boyer and the Law of 1994. In the classification of Arnott, the rent control in Spain turned into a "second generation" type in the decade of 1960, at least for a part of the market. The modernization of the regime of the compulsory extensions of the tenancy contract had to wait until 1985. However, a compulsory term of 5 years was introduced in 1994.

## 2.2 ITALY

As it was highlighted in the case of Spain, the general rules applying to the tenancy contracts in Italy were liberal. The Civil Code of 1942 established in its article 1322 that the content of the contracts is free, although it must respect the Law. However, in Italy, as in Spain, it is possible to find several special regulations since the decade of the 1920's that partially introduced restrictions affecting the rents and the term of the contracts (Breccia and Bargelli, 2005).

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<sup>7</sup>Law 29/1994 of 24 of november 1994.

The first complete Law on tenancy contracts was not passed until 1978<sup>8</sup>. It introduced a quite severe rent control system as the rent was determined by the criteria introduced by the legal text. In fact, the Law included different coefficients depending on the population of the municipality, age of the building, floor number, cadastral type, state of repair or preservation. On the other hand, the Law established a compulsory term of 4 years extensible to another term. Other compulsory terms of 6 to 9 years were applicable depending on the activity to be developed in the dwelling (6 years if the property was going to have industrial use).

In 1992<sup>9</sup>, a new Law deregulated rents for new contracts and introduced some rules to deregulate older ones under some restrictions. No changes were passed for the case of compulsory terms. That Law can be deemed as the introduction of the second generation rent control in Italy.

Those steps towards liberalization were confirmed in 1998 with the enactment of the most recent tenancy Law in 1998 (Law 431/1998<sup>10</sup>), that confirmed the liberalization of rents introduced by the brief reform of 1992. After the enactment of the new Law, the parties can freely negotiate the rent as well as the increase after signing the contract, although there are some special cases in which the increase in the rent is limited (a maximum of 75% of a "cost of life" measure). On the other hand, another piece of legislation (Law 431/1998) at the same time introduced some rules related to the duration of the contract by establishing a minimum term of four years.

The reforms of Italian regulations towards a more liberal framework for the tenancy contracts is influenced by the idea that the market was not working properly. 36% of the dwelling stock was rented in 1980 but just 22.5% in 1991 (see Figure 1). Recent data from 2004 show that the decreasing pattern continued, reducing the share to just 18.6%. Thus, the partially liberalizing measures do not seem to have inverted the downward trend. However, as in the case of Spain the pace of reduction seems to have slowed down recently.

## 2.3 FINLAND

As in the previous cases, at the beginning of the 20th century, the legal basis of the tenancy contracts was again liberal in the sense that mainly non-compulsory restrictions were applying to the tenancy contracts (Ralli, 2005). After the First World War, Finland has passed through different periods of regulation and deregulation. Rent control was introduced for first time during the First

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<sup>8</sup>Law 392/1978 ("sull'equo canone") of 27 July.

<sup>9</sup>Decree-Law of 11 July 1992 (converted in Law 359/1992 of 8 August).

<sup>10</sup>Law 431/1998 of 9 December.



World War but was lifted by the first Law on tenancies of 1925<sup>11</sup>. Following the same pattern, the second period of rent control took place during the II World War, but in this case, the restrictions were maintained after the end of the conflict. In fact, the restrictions applied to several cities until the decade of 1960.

Then, a more deep rent regulation, that proceeded to freeze the rents of the tenancy contracts, took place in 1968 (thus, as an example of first generation rent control). In 1969, as a reaction to the effects of the rent freeze, tenants were given protection against eviction in an unlimited basis. The restrictions were introduced in the Constitution in 1970.

The regulations affecting the tenancy market in Finland were gradually relaxed afterwards. The rent freeze was substituted by a complex system of rent regulation in the decade of 1970 and was confirmed, with some reforms in the Law 634/1987.

Heavy regulation was accompanied by a relative contraction of the tenancy market. From 1970 to 1990 the rented share of the dwelling stock shrank from 32.5% to 24.7% (see Figure 1).

In the decade of 1990 the market was gradually liberalized again in three steps: from 1991 some buildings constructed after the beginning of the year in specific zones of Finland were freed from rent control. The measure was extended to all the new contracts in 1992. Finally, the new tenancy Law of 1995<sup>12</sup> deregulated all tenancy contracts (the only exception that still survived to the deregulation were the special rules for the state-subsidized rental dwellings of the ARAVA program). On the other hand, the new Law does not include any restrictions with respect to the term contracted. Any short-term agreement is possible. We can conclude that Finland is the only example of total liberalization of the tenancy market in the European Union.

Lyytikäinen (2006) identifies the abolishing of the rent control with both a rise in the rent paid and an increase in the share of rented dwellings. On one hand, the average rent per square meter increased by 57% between 1990 and 2004 (Lyytikäinen, 2006). On the other, the share of the housing market that was rented increased to 31% in 2004 (see Figure 2).

## 2.4 UK

The UK (England and Wales in this study) does not have a specific "housing law". Thus, the applicable norms to the tenancy contracts stem from more

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<sup>11</sup> Law 166/1925 of 12 May.

<sup>12</sup> Law 481/1995 of 31 March.

general branches of Law such as property law and contract law (Cowan and Laurie, 2005). However, as said when analyzing the examples of continental countries, some restrictions applicable to the tenancy market were introduced by enacting special regulations.

The history of such special regulations (statutes) in the case of England and Wales is specially rich. The first example of rent control and protection against eviction is found during the first World War with the "Increase in Rent and Mortgage Interest Act" 1915<sup>13</sup>. The end of the War was not taken as an opportunity to de-regulate the market and in fact several other Acts<sup>14</sup> preserved or even extended the rent controls (Diamond, 1960). As a matter of fact, the restrictions (rent control in this case) did not disappear until 1965. It was, then when rent control was substituted by rent regulation as an evolution from a "first generation" to a "second generation" control.

Paish (1972) highlights some effects of these long-lasting restrictions in England. According to him, they clearly had a negative effect over the maintenance of the dwellings. On the other hand, they reduced mobility of tenants who rented a rent-controlled dwelling (they find unprofitable to move) and also reduced the number of units being let, as an important part of the formerly rented dwellings were gradually channeled towards the property market.

Some empirical studies in specific cities of the USA have found similar effects. Sims (2007) found that de-regulation in Boston increased the number of houses to let (but also the rent paid). The same author finds that rent restrictions reduced the quality of the dwellings being rented. That result was previously found for other historical experiences of rent control as in New York (Olsen, 1972, Early, 1999).

Later on, the Rent Act 1977 established "protected tenancy", that included a second generation rent control, although the increase in the rent responded to complex provisions and also maintained a permanent protection against eviction for the tenant. Thus, the tenant could stay in the dwelling as long as needed.

Thus, the market had to wait until the enactment of the Housing Act of 1988 to achieve any significant liberalization. The new legislation abolished the rent regulation and since then rents were set up in free market. As far as compulsory terms are considered, the Act introduced a new type of regulated contract, the "assured shorthold tenancy" with a protection against eviction for just 6 months. However, it also included an "assured tenancy" contract, with similar conditions to the old "protected tenancy". Finally, a new Housing Act of

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<sup>13</sup>Increase of Rent and Mortgage Interest (War Restrictions) Act, December 1915.

<sup>14</sup>Increase of Rent and Mortgage Interest (Restrictions) Act, 1920. The Rent and Mortgage Restrictions Act, 1923. Furnished Houses (Rent Control) Act, 1946. Landlord and Tenant (Rent Control) Act 1949.

1996 introduced further changes in favour of the generalization of the "assured shorthold tenancy".

Thus, England and Wales have suffered an evolution from a liberal concept of tenancy contracting to a strict system of contract restrictions, finally returning again to a quite liberal concept of tenancy contract in which the main restriction is the "compulsory" term of 6 months, quite short compared to regulations of other European countries.

The figures of the tenancy market in England and Wales also show quite important changes. In 1900, just 10% of households were owner-occupiers while in 2000 that proportion reached 70% (Cowan and Laurie, 2005). In 2004, the share of rented dwellings in the UK was 31% (see Figure 1). We can observe a slow reduction in the proportion of rented dwellings during the last decades although more recently this proportion remained stable (see Figure 2).

## 2.5 RECENT REFORMS

These cases suggest the existence of a general pattern in the evolution of tenancy market regulation in Europe over the 20th century: Initially all countries moved from a liberal concept of tenancy relations toward a more protective and interventionist approach. That change was influenced by the War experience. The introduction of very restrictive regulations coincides with significant reductions in the share of rented dwellings. Later on, all countries tended to reduce the burden imposed on the landlord and tried to reduce tenant's protection. De-regulation was paralleled by an increase in rented dwellings in Finland and a stabilization in other cases. Those effects can be taken as partial evidence, admittedly very weak, that the restrictive European regulations may have produced some negative effects in the European markets. As said before, there are some other important factors affecting the tenancy market that are not taken into account in this partial-equilibrium argument (i.e. improved access to credit, changing mobility patterns, etc).

All European countries nowadays have some kind of "second generation" controls (with the exception of Finland). Table 1 shows two key features of the current European regulations in 12 EU member states (Austria, Belgium, Denmark, England/Wales, Finland, France, Germany, Ireland, Italy, Portugal, Spain and Sweden): the minimum length of the tenancy contract (if such term exists) and the rules governing the increase of the rent paid by the tenant.

Accross the EU, direct regulation of the rent that a landlord can charge at the moment of signing a contract (see column "RENT") has completely dissappeared. On the other hand the negotiation of the increase in the rent paid by the sitting tenant after the first year of contract is not free but regulated in

several countries as examples of "second generation" controls. For instance in Austria, Belgium, France, Germany, Spain or Portugal the increase of the rent is tied to an index set by the lawmaker (see Table 1). In Austria, Portugal and Spain that limit is the Consumer Price Index (CPI). Similarly, in Belgium the maximum increase is the "cost of living". In France the maximum increase is given by the "construction cost index" (set by the government). Other countries had similar restrictions until recent years (Finland).

In relation to the second issue, the Law usually protects the tenant against eviction for a period (see column "TERM") by setting a "compulsory term" of a certain duration (for instance five years in Spain). Therefore the tenant may decide not to move for five years or to move after the first one, but the landlord cannot reduce the length of the contract. Even when the owner necessitates the residence for himself the rules are very restrictive. It is after those five years when a real re-negotiation between the landlord and the tenant could be initiated. In other countries other terms are applied (four years in Italy or three years in France). Other jurisdictions, like the ones in several cities of the United States or Asia, do not introduce this second restriction or establish a simpler "infinite" or unconditional protection.

### **3 A MODEL FOR EUROPEAN TENANCY MARKETS**

The objective of this section is to explore theoretically the possible effects of the European-type of tenancy market regulations on the quantity of houses being let in the market. For this purpose, the model proposed by Basu and Emerson (2000) is modified and adapted to the general European framework. Understanding the impact of restrictive institutions can help to identify one of the possible determinants of the significant reduction of the share of the tenancy market.

#### **3.1 THE BASU AND EMERSON MODEL FOR TENANCY MARKETS AND THE EUROPEAN INSTITUTIONS**

In their original model, Basu and Emerson (2000) study a very restrictive "first generation" type of rent control. In their setup, once the contract is signed, the landlord cannot update the rent until the end of the contract and the tenant decides how long he wants to stay in the residence, as the Law protects him against eviction forever. Under these conditions, the tenant can take a residence for a rent (freely negotiated at that moment) and keep it until he decides to

move out. In this context, due to the eroding effect of inflation, it is of extreme relevance for the landlord to know the kind of tenants he takes (type understood as "long-stayer" or "short-stayer" as, with inflation, the rent in real terms is being reduced, period after period). In this institutional setting, inflation acts as a tax on landlord's income with redistributive consequences, adverse to owners and favourable to tenants. These stylized institutions differ quite considerably to what the Law regulates nowadays in Europe (see Table 1).

In Europe nowadays policymakers are aware of the existence of inflation as an "ever" increasing "cost of living" in the economy as we saw in section 2. Therefore European legislations allow the landlord to increase the contracted rent, period after period, by a rate linked to some indicator of past inflation (CPI or a similar index). As analyzed before, that would be a "second generation" rent control. Note that those measures are related to the increase of prices in the whole economy (and not specifically to the increase of price or rent in the tenancy market).

Another main feature of the typical European regulation is that, although the Law protects the tenant against eviction, that protection does not last forever (usually for 3 to 5 years). This is in contrast with the Basu and Emerson (2000) model in which the protection lasts forever.

### 3.2 BASICS OF THE MODEL

Basu and Emerson (2000) propose a partial equilibrium model for the tenancy market in which the market is affected by a problem of asymmetric information and adverse selection. There are two types of agents in the model: landlords (several or limited in number, therefore allowing for the analysis of market power) and tenants.

The main aspect of the tenants' side of the market is that they are distributed in groups or types that differ in how long they stay in the residence. To be consistent with the usual contracts signed in the rental markets in Europe (where the contracts are usually signed on a yearly basis) and to apply later the model to Europe we can say that a type 1 tenant stays 1 year in the residence. A type 2 stays 2 years and so on (usually the re-negotiation of the contracts in Europe is done at annual frequency). A fraction  $i$  of the tenants is of type  $i$  (all types together sum up to a probability,  $p$ , of 1). If  $t$  represents time, the following can be written:

$$t_1 < t_2 < t_3 < \dots < t_n \tag{1}$$

The length of the contract will be defined by the tenant's type as it is the tenant who decides when to move (as he is protected against eviction forever in the Basu and Emerson (2000) setup).

The tenant knows his type, but the landlord does not have that information before the tenant decides to leave the residence. Therefore, the landlord will not be able to choose the tenants' type.

An essential issue of the model is that it assumes that there is inflation  $(1-\beta)$  in the economy (although in the Basu-Emerson framework the lawmaker did not take into account that fact when passing the regulation). The rent asked by the landlord will diminish over time in real terms period after period. Therefore the landlord receives the real value  $\beta$  after one period (or the fraction  $\beta$  of the rent if the rent is different from 1 euro). Also, it is necessary to take into account that a landlord does not value the same a rent he receives today compared to the rent that he will receive tomorrow. Therefore a discount factor ( $\delta$ ) has to be introduced in the model.

Being  $v_i$  the value of the rents that a landlord receives from his tenants if only type  $i$  tenants show up, and assuming that each tenant of type  $i$  (if the rent  $R = 1$ ) will generate an income of:

$$1 + \beta + \beta^2 + (...) + \beta^{t-1}$$

Summing up for an infinite succession of type  $i$  tenants and taking into account the discount factor, we have:

$$v_i = \{1 + \beta\delta + [\beta\delta]^2 + (...) + [\beta\delta]^{t_i-1} + \delta^{t_i}v_i\} \quad (2)$$

The following holds:

$$\text{If } i < j \text{ then } v_i > v_j \quad (3)$$

On the other hand,  $v_{(i)}$  is the value of the rents that a landlord receives when only types  $i$  or above show up.

$$v_{(i)} = \sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) [1 + \beta\delta + [\beta\delta]^2 + (...) + [\beta\delta]^{t_k-1} + \delta^{t_k}v_{(i)}] \quad (4)$$

Where  $p_k$  is the probability of getting a type  $k$  tenant into the apartment. Then, the following holds,

$$\text{If } i < j \text{ then } v_{(i)} > v_{(j)} \quad (5)$$

As it can be noted, from the point of view of a landlord, the higher the value of  $v$  the better. Therefore he would prefer to have short stayers rather than long stayers. That is because the effect of inflation, that erodes the value of rent in real terms.

In the model, Basu and Emerson (2000) introduce adverse selection through limiting the types of tenants that will be finally renting a residence. If the rent is very high some types of tenants will not find it affordable to rent and therefore will opt for other options, like remaining in the family home. This outside option is assumed to be the same for the different types and it is assumed to have a similar value in any case. Therefore, the different outputs of the model are generated by heterogeneity on the tenants side (as said, some of them are short stayers while others want to rent the flat for very long periods). For a landlord it is more profitable to have short stayers (lower types) than long stayers (higher types).

The adverse selection mechanism works in that case because the model proposes that the short stayers are the first ones to decide not to rent when the rent is high. Supposing that renting a residence gives the tenant a utility of  $T$  and remaining in the parents home (or equivalent options) a utility  $NT$ , the difference between both utilities ( $D$ ) must be positive for an individual to prefer renting.

$$T - NT = D > 0 \quad (6)$$

For a tenant it is not important the rent  $R$  but that rent expressed in present value terms ( $v_i$ ), therefore already "eroded" by the inflation. Thus a tenant will rent if:

$$T - NT = D \geq Rv_i \quad (7)$$

Note that  $v_i$  depends on  $i$ , so if  $j > i$  then  $v_i > v_j$ .

On the other hand, Basu and Emerson (2000) call  $V(R)$  the landlord's expected present value of the rents he receives when the rent (in nominal terms) is  $R$ . See figure 3.

$$V(R) \text{ reaches its maximum when } R = D/v_n \quad (8)$$

Being  $D/v_n$  a critical level of the rent at which the higher type of tenant (so far the type  $n$  or the type 4 in figure 3) decides not to rent.  $C$  represents the cost for the landlord of leasing out a residence (preparing the apartment to be rented as for instance paying some administrative fees).

We have the following critical values of  $V(R)$  as a result,

$$\left\{ \begin{array}{l} V(R) = v_{(1)} \text{ if } R \leq D/v_1 \\ V(R) = v_{(2)} \text{ if } D/v_1 < R \leq D/v_2 \\ V(R) = v_{(3)} \text{ if } D/v_2 < R \leq D/v_3 \\ V(R) = v_{(4)} \text{ if } D/v_3 < R \leq D/v_4 \\ V(R) = 0 \text{ if } D/v_4 < R \end{array} \right\}$$

Figure 2 can be explained as follows: the curves  $v_{(i)}$  define the height of the  $V(R)$  curve at the breaking points.

The results obtained in this basic setup are the following: if we have a monopolistic landlord, he will charge a rent  $R = D/v_n$ . So only the higher type ( $n$ ) will stay in the market (all the rest of the types will find it un-affordable to rent and will opt for other options). The higher type that stays in the market is the tenant that wants to rent the residence for 4 years in figure 3 or the one renting the residence for three years in figure 5. On the other hand, when there are competitive landlords, the height of the peaks (defined by the breaking points in the  $V(R)$  line as highlighted before) play an important role. The rent  $R^*$  will be defined by  $C = V(R)$  that is, the intersection between the line  $C$  and the  $V(R)$  curve. The rent paid in the market will approach the cost of preparing the residence to be rented.

The rent  $R$  obtained in that case will define which types (if any) of tenants will decide not to rent. The lower the  $C$  the lower the equilibrium rent and therefore the less types of tenants that will be "excluded" from the market.

### 3.3 THE BASIC MODEL WITH INFLATION (CPI) ADJUSTED RENTS

Basu and Emerson (2000) based their model on the existence of inflation in the economy. As said, the inflation will erode the real value of the rent and therefore the landlord will be interested in having short-staying tenants instead of long-stayers. What are the effects for the model if the landlord is allowed to increase the rent exactly to overcome the erosion produced by the inflation (as general inflation or Consumer Price Index, CPI)? The question is relevant for the European case as in Europe the Law (see Table 1) allows for inflation escalation in the contracts.

With inflation escalation (following  $\beta$  in the model), and in the case the landlord always hosts tenants that want to stay just " $i$ " periods (with  $R = 1$  euro), the following holds, including a discount factor  $\delta \in (0, 1)$ :



$$v_i = [1 + \delta + \delta^2 + (\dots) + \delta^{t_i-1} + \delta^{t_i} v_i] \quad (9)$$

Which is equivalent to:

$$v_i = \frac{(1 - \delta^{t_i})}{(1 - \delta)(1 - \delta^{t_i})} = \frac{1}{(1 - \delta)} \quad (10)$$

Equation 10 does not depend on a sub-index. Therefore the type of tenant is irrelevant for the landlord in this case as expected.

In line with this, it is possible to analyze how other expressions simplify when we allow for inflation escalation. As before,  $v_{(i)}$  represents the stream of income a landlord receives when type  $i$  tenants or above make themselves available for the landlord.

$$v_{(i)} = \sum_{k=i}^n \left[ \left( \frac{\frac{p_k}{n}}{\sum_{j=i}^n p_j} \right) (1 + \delta + \delta^2 + (\dots) + \delta^{t_k-1} + \delta^{t_k} v_{(i)}) \right] \quad (11)$$

That, properly simplified, is again:

$$v_{(i)} = \frac{1}{(1 - \delta)} \quad (12)$$

Once more the type of the tenant is irrelevant for the landlord when we allow rent escalation following the inflation (12 does not depend in any sub-index).

With those results we are not able to differentiate between those that find it worthwhile to rent and those who prefer to stay out of the tenancy market.

As  $Rv_i \leq T - NT$  and  $v_i$  does not depend any more on the type, then we have,

$$\frac{R}{(1 - \delta)} \leq T - NT \quad (13)$$

Therefore the type of the tenant is not important in the decision of renting. In any case condition 13 is required to hold to have a tenancy market (otherwise no one would be willing to rent).

As a criticism to the considerations made above it should be said that concluding that the introduction of rent escalation (following  $\beta$  in the model) removes the mechanism of adverse selection is not true in all cases. Only if the CPI (taken as  $\beta$ ) coincides with the observed increase in the rents contracted in the market (the sub-index of rented property of the CPI), the correction by  $\beta$  would eliminate the adverse selection mechanism in the market. The next section is devoted to discuss on that topic.

### 3.4 EUROPEAN RENT ESCALATION AND ADVERSE SELECTION

Overcoming the adverse selection problem is only possible if the allowed rent escalation follows the increase in the rents observed in the economy (the sub-index of rented property in the CPI or a similar index representing the tenancy market) and not just a general price index (as it is usually the case in Europe). Of course, an escalation following a general price index solves the problem if the increase in the rents in the tenancy market specifically coincides with it. Objectively, that situation is difficult to occur and it is not the general case for the European economies (see Figure 4 for Spain).

The incentive for a landlord to prefer short stayers versus long stayers is that the rent he gets is eroded, period after period (once signed a contract), compared to that asked in the new contracts in the market. If the landlord gets short stayers he will be able to reset the rent he asks as soon as he has a new tenant and therefore he would be able to charge the rent at the market level, fully updated to the inflation and rent market increase of the last periods. If the Law allows to fully update the rent, period after period, following the observed market increase in the tenancy market specifically, the incentive for the landlord to have short stayers disappears. He would get the same revenue (if there is not extra costs) updating the rent of the sitting tenant or changing the tenant for a new one in the market.

Therefore, does the updating of the rent following just the "inflation" (understood as the "consumer price index" or "cost of living") remove the incentive of the landlord to have short stayers? The answer is no, if the increase in the rent index (i.e. the specific "inflation" of the tenancy market) is higher.

Lets test the statements in the model. For convinience lets call the rate at which the rents grow in the market as  $1 - \gamma$ . On the other hand, forcing somehow the notation, lets call  $\theta$  the rate at which the regulation allows the landlord to update the rent period after period (note that we would be able to rewrite it as  $\theta = 1 - \beta$ ).  $\theta$  may be understood as the CPI index (or equivalent, as a "cost of life" index) in the European regulations.

Lets demonstrate that in a market where the Law allows to escalate the rent following  $\theta$  and  $\theta < 1 - \gamma$ , then there is a problem of adverse selection in the tenancy market.

The stream of income that the landlord receives (when having just tenants who stay  $i$  periods) would be (if  $R = 1$  euro):

$$1 + [\gamma + \theta] + [\gamma + \theta]^2 + (\dots) + [\gamma + \theta]^{t_i - 1} + 1 + [\gamma + \theta] + [\gamma + \theta]^2 + (\dots) + [\gamma + \theta]^{t_i - 1} + (\dots) \quad (14)$$

Taking into account a discount factor  $\delta$  as before, we can now construct the expressions we need to set up the model.

$$v_i = \{1 + \delta(\gamma + \theta) + [\delta(\gamma + \theta)]^2 + (\dots) + [\delta(\gamma + \theta)]^{t_i - 1} + \delta^{t_i} v_i\} \quad (15)$$

That is,

$$v_i = \frac{1 - [\delta(\gamma + \theta)]^{t_i}}{[1 - \delta(\gamma + \theta)](1 - \delta^{t_i})} \quad (16)$$

Then, the following holds,

$$\text{If } i < j \text{ then } v_i > v_j \quad (17)$$

As before,  $v_{(i)}$  represents the stream of income a landlord receives when type  $i$  tenants or above make themselves available for the landlord.

$$v_{(i)} = \sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) [1 + [\delta(\gamma + \theta)] + [\delta(\gamma + \theta)]^2 + (\dots) + [\delta(\gamma + \theta)]^{t_k - 1} + [\delta(\gamma + \theta)]^{t_k} v_{(i)}] \quad (18)$$

That can be rewritten as follows,

$$v_{(i)} = \frac{\sum_{k=i}^n p_k (1 - \delta^{t_k}) v_k}{\sum_{j=i}^n p_j - \sum_{k=i}^n p_k \delta^{t_k}} \quad (19)$$

Then the following also holds:

$$\text{If } i < j \text{ then } v_{(i)} > v_{(j)} \quad (20)$$

As it is possible to conclude from the equations set out so far, the landlord prefers short stayers than long stayers as the income he receives will be higher with short stayers. Also the agents are not indifferent with respect to time. A long stayer pays less per period (in real terms) than a short stayer. The decision of renting is affected by that fact.

As before:

$$T - NT = D > Rv_i \quad (21)$$

As said, if  $i < j$  then  $v_i > v_j$ . Then, short stayers will be the first types of tenants to decide not to rent because they "suffer" a higher value  $v$ . Therefore there is a clash between the interests of the landlord and the behaviour of the potential tenants when they make their decisions. The landlord's expected present value of the rent will reach its maximum when  $R = D/v_n$ . That is  $D = Rv_n$ .

**CONCLUSIONS** If the rent escalation allowed is below the rate of rent increase in the tenancy market (what was called "rent index"), the adverse selection problem continues to affect the market outcomes.

Therefore, even though the Law in Europe allows for rent escalation following the inflation, it does not avoid the adverse selection problem to affect the market outcomes when the rent signed in the new contracts grows faster than the rate of inflation. The inefficiency in the market will be higher if the difference between the CPI (or other general index of inflation considered in the Law) and the specific rent index grows.

### 3.4.1 BETWEEN EXTREME CASES

Lets derive a general result explaining how the inefficiency in the tenancy market increases when the difference between the rent price index and the allowed escalation (CPI) increases. The following is proposed:

$$\text{If } \theta < \theta' \text{ then } v_{i(\gamma+\theta)} < v_{i(\gamma+\theta')} \text{ and } v_{(i)(\gamma+\theta)} < v_{(i)(\gamma+\theta')} \quad (22)$$

Having a given rate of rent increase in the market  $(1 - \gamma)$ , an increase in the allowed rate of escalation ( $\theta$  to  $\theta'$ ), will yield that  $v_{i(\gamma+\theta)} < v_{i(\gamma+\theta')}$  and  $v_{(i)(\gamma+\theta)} < v_{(i)(\gamma+\theta')}$  ceteris paribus. The expression  $v_{i(\gamma+\theta)}$  denotes that  $v_i$  now depends on the measure  $\gamma + \theta$ . It is worth noting that an increase in  $\theta$  (having  $\gamma$  constant) is a bad new, a priori, for a tenant, as the real rent he will pay increases.

From the fundamental equations already proposed it is possible to derive the following (when  $R = 1$ ).

$$(1 - \delta^{t_i})v_i = 1 + \delta(\gamma + \theta) + [\delta(\gamma + \theta)]^2 + (...) + [\delta(\gamma + \theta)]^{t_i-1} \quad (23)$$

By inspection of equation 23 it is easy to see that the higher the  $\theta$ , the higher is the value of  $v_i$  (if  $\gamma$  is constant).

Also,

$$v_{(i)(\gamma+\theta)} = \frac{\sum_{k=i}^n p_k (1 - \delta^{t_k}) v_{k(\gamma+\theta)}}{\sum_{j=i}^n p_j - \sum_{k=i}^n p_k \delta^{t_k}} \quad (24)$$

Then the higher the  $\theta$ , the higher the value of  $v_{(i)}$ .

Graphically, when observing the shape of the  $V(R)$  curve it is important to highlight that the curves representing  $v_{(i)}$  and  $v_i$  are steeper the higher is  $\gamma + \theta$  (i.e. the lower is the escalation allowed by the government the flater are those lines). Therefore it is of interest to observe the "peaks" generated by those curves because those peaks will determine the rent paid in the market when several landlords compete. The height of a peak is defined by  $(D)v_{(i)}/v_i$ . Therefore it is necessary to analyze the value of  $v_{(i)}/v_i$  when the allowed escalation changes.

Having that  $k > i$  (the tenant of type  $k$  stays longer than a tenant of type  $i$ ) the following must hold when  $\theta < \theta'$ ,

$$\frac{v_k(\gamma+\theta)}{v_i(\gamma+\theta)} < \frac{v_k(\gamma+\theta')}{v_i(\gamma+\theta')} \quad (25)$$

Lets define  $\tau$  as the extra time a type  $k$  stays in the residence with respect to a type  $i$ .

Then, from the general derivation calculated in 16, the following holds,

$$\frac{v_k(\gamma+\theta)}{v_i(\gamma+\theta)} = \frac{1 - \delta^{t_i}}{1 - \delta^{t_i+\tau}} \cdot \frac{1 - [\delta(\gamma + \theta)]^{t_i+\tau}}{1 - [\delta(\gamma + \theta)]^{t_i}} \quad (26)$$

And having that

$$\frac{\partial(\frac{v_k(\gamma+\theta)}{v_i(\gamma+\theta)})}{\partial\theta} > 0 \quad (27)$$

It is obtained that an increase in  $\theta$  (i.e. a reduction of the gap between the market rent increase and the "CPI") yields an increase in  $\frac{v_k(\gamma+\theta)}{v_i(\gamma+\theta)}$ .

From 25, the following must hold (for,  $\theta < \theta'$ ).

$$\frac{v(i)(\gamma+\theta)}{v_i(\gamma+\theta)} < \frac{v(i)(\gamma+\theta')}{v_i(\gamma+\theta')} \quad (28)$$

What we have obtained is an important result for understanding the problem graphically. Inequality 28 is indicating that the higher the rent escalation  $\theta$  allowed by the Law, the higher the "peak" (at the break points).

**RESULTS** If there are several landlords competing to get the tenants and a cost  $C$  of preparing a residence to be rented, the equilibrium rent is defined graphically by the point of hit between  $C$  and the  $V(R)$  curve. If we see that the escalation allowed is lower (and therefore the lines and the peaks get flatter and shorter respectively), the equilibrium rent must increase as the  $V(R)$  line moves to the right and the peaks are now shorter.

A higher rent excludes more types of potential tenants from the market. As  $\theta$  grows, the peaks of the  $V(R)$  line get higher and the break points move to the left having as result a smaller  $R$  (so less types are excluded, that is a relief for the adverse selection problem).

On the other hand, in a monopolistic case, the rent will be set up at  $D/v_n$ . Hence the equilibrium rent will change slightly depending on the value of  $v_n$  (as  $v_{n(\gamma+\theta)} < v_{n(\gamma+\theta')}$ ). So when the escalation allowed is higher, the equilibrium rent for the case of monopoly is lower.

The statements made above, after application of the model allows to conclude that allowing for a higher rate of escalation mitigates the inefficiency of the market.

### 3.4.2 IF THERE IS A REDUCTION IN THE MARKET RENTS

If  $\gamma$  is exactly equal to the amount that the government allows for escalation (the "cost of living" or the CPI) no adverse selection will take place.

What would happen to the old tenancy relations in a market where the rents agreed in the new contracts are diminishing in time? In that case the rents of the market (the rents agreed in the new contracts signed one period after another) would be falling. i.e. the new tenants (the tenants that just arrived to the market) would be paying less than the old tenants renting similar flats. How can a landlord keep the tenant? The only way is to reduce the rent he asks at a rate (falling) near to the one of the market.

In this case, there is not a problem of adverse selection and therefore the Law as usually passed in Europe does not produce the inefficiencies we are studying when there is a persistent reduction of market rents.

## 3.5 ANALYSIS OF CONTRACTS WITH LIMITED TERM OF PROTECTION FOR THE TENANT

As already discussed, the Law in Europe does not generally protect the sitting tenant forever. In fact, the Law usually protects the tenants against eviction

for a short number of periods (usually 3 to 5 years). After that term, the tenant and the landlord will have to renegotiate the contract. Thus, the continuation of the relation is not guaranteed. Therefore the contract is virtually new after the relation reaches the term of protection.

The aim of this section is to introduce this limited protection for the tenant into the model. A relevant issue for the landlord in the model is that he cannot distinguish between tenants' types. With a Law that protects the tenants for  $m$  periods, the landlord knows that the higher type that exists in the economy is a type  $t_m$ . That is because a landlord is not willing to keep a tenant more than  $m$  periods as for any  $n > m$ ,  $v_m > v_n$  and  $v_{(m)} > v_{(n)}$ . Therefore, in this context of asymmetric information, if the Law protects the tenant for  $m$  periods, that make the higher types to disappear (after  $m$  periods the landlord will evict the tenant if he does not pay the actual market rent).

If before introducing the restriction the higher type of tenant in the economy was a type  $k$  and afterwards a new Law including a protection term of  $m$  periods is passed, that "limited term of protection" is neutral and does not produce any effect in the economy if  $k < m$ . Thus, in the next paragraphs we assume that the higher type of tenant ( $k$ ) existing in the market is willing to stay longer in the residence than the protection term ( $m$  periods). Therefore, we study the case in which the Law is a constraint.

**INTRODUCING THE TERM IN THE MODEL** We should analyze how the expressions for  $v_i$  and  $v_{(i)}$  change and thus if there is a new equilibrium when we introduce a compulsory term.

$v_i$  (i.e.:  $v$  for type  $i$ ) does not change if we change the different types of tenants that exist in the economy. Although note that a value  $v$  exists only for the types  $i \leq m$ . On the other hand,  $v_{(i)}$  changes. Now, the tenants that can "show up" correspond to a less number of types. Lets call  $v_{(i,m)}$  to the value for the expression  $v_{(i)}$  when just types  $i$  to  $m$  can show up. Then the following condition holds:

$$v_{(i,m+1)} < v_{(i,m)} \quad (29)$$

To prove 29, we know that,

$$v_{(i,m+1)} - v_{(i,m)} = \frac{\sum_{k=i}^{m+1} p_k(1 - \delta^k)v_k}{\sum_{j=i}^{m+1} p_j(1 - \delta^j)} - \frac{\sum_{k=i}^m p_k(1 - \delta^k)v_k}{\sum_{j=i}^m p_j(1 - \delta^j)} \quad (30)$$



Then, equation 30 can be expressed as follows,

$$v_{(i,m+1)} - v_{(i,m)} = \frac{\sum_{k=i}^m p_k(1-\delta^k)v_k \left( \frac{\sum_{k=i}^m p_k(1-\delta^k)}{\sum_{j=i}^m p_j(1-\delta^j)} - \frac{\sum_{k=i}^{m+1} p_k(1-\delta^k)}{\sum_{j=i}^{m+1} p_j(1-\delta^j)} \right) + p_{m+1}(1-\delta^{m+1})v_{m+1}}{\sum_{j=i}^{m+1} p_j(1-\delta^j)} \quad (31)$$

That is below zero:

$$v_{(i,m+1)} - v_{(i,m)} = \frac{P_{m+1}(1-\delta^k) \left( v_{m+1} - \frac{\sum_{k=i}^m p_k(1-\delta^k)}{\sum_{j=i}^m p_j(1-\delta^j)} v_k \right)}{\sum_{j=i}^{m+1} p_j(1-\delta^j)} < 0 \quad (32)$$

When the Law protects the tenant against eviction for a longer time, the value of  $v_{(i)}$  diminishes (i.e  $v_{(i,m+1)} < v_{(i,m)}$ ). If a Law reduces the number of periods of protection against eviction from  $m+1$  to  $m$  we should expect an increase of the value of  $v_{(i)}$ . In figure 5 a situation where the Law reduces the maximum term of protection from  $m=4$  to  $m=3$  is represented.

**CASE OF HAVING A MONOPOLISTIC LANDLORD** Reducing the number of periods of protection yields a reduction in the rent charged by the monopolist, therefore less (lower) types of tenants are excluded from the market.

As we have discussed already, the monopoly charges a rent equal to  $R = D/v_t$ . Where  $t$  represents the higher type existing in the economy. If we reduce the number of periods of protection against eviction  $t$  will be lower. With a lower  $t$  the value  $v_t$  is higher. With a higher  $v_t$  the rent ( $R$ ) charged by the monopolist will be lower if the outside option does not change.

**CASE OF HAVING COMPETITIVE LANDLORDS** When the number of periods of protection is reduced, the equilibrium rent also decreases. That could exclude, therefore, less (lower) types of tenants from the market. That is, the landlords will charge a rent determined by the cost  $C$  of letting the dwelling to be rented into the market. Graphically, as the curves defined by  $v_i$  continue to be in the same place, but the curves defined by  $v_{(i)}$  are now steeper, we have now a new  $V(R)$  line. This  $V(R)$  line maintains the place where we can find the "breaks" (peaks) ( $D/v_1, D/v_2...$ ) but the height of the peaks are now higher. The coincidence between the  $V(R)$  line and the  $C$  line will yield an equilibrium rent that is lower than before.

### 3.6 SUMMARIZING THE RESULTS OF THE MODEL

The aim of the model was to analyze the effects in the market of the introduction of two highly spread (and typically European) institutions: a maximum allowed increase in the rent asked by the landlord and the protection against eviction for the tenant for a limited number of periods.

If the rent escalation allowed is below the rate of rent increase in the tenancy market, an adverse selection problem affects the market outcomes. The adverse selection problem gets worse as the difference between the allowed escalation and the market rent increase grows. That will increase the equilibrium rent and through the mechanism of the model exclude some tenants from the market. On the other hand, we concluded that the longer the time that the Law protects the tenant against eviction, the higher is the rent to pay and therefore we could also observe how the tenancy market shrinks. Note that the effects of both restrictions go in the same direction.

## 4 CONCLUSIONS

This study provides an economic analysis of the institutions of the European type of tenancy contracts. Two spread type of interventions (compulsory terms for the contracts and the European type of rent control) are tested theoretically in a model of tenancy markets proposed by Basu and Emerson (2000). The results of the model show that those interventions entail some negative effects as they may drive some participants out of the tenancy market.

Therefore the model offers a partial-equilibrium explanation to the reduction in the weight of the tenancy markets in Europe during the 20th century. As analyzed in Section 2, the introduction of several legal restrictions in the tenancy market in several European market was coincident with the reduction in the weight of the rented dwellings in the housing market.

The conclusions found in this paper must be taken with care as many other factors influenced the weak evolution of the tenancy market in Europe during the second part of the 20th century such as an increased access to credit.

## A. APPENDIX

### A.1. PROOF FOR EXPRESSION 17

It has been followed the demonstration of Lemma 1 of Basu and Emerson (2000) to provide a proof for 17.

We want to demonstrate that:

$$\text{If } i < j \text{ then } v_i > v_j$$

Lets assume that  $t_j = t_{i+1}$  and that  $v_j^k$  is the present value of rents earned by a landlord whose first  $k$  tenants are of type  $i$  and all others of type  $j$ .

It is possible to see that  $v_j^1 > v_j$ . For a rent  $R = 1$ ,  $v_j^1$  is the following:

$$v_j^1 = 1 + \delta(\gamma + \theta) + [\delta(\gamma + \theta)]^2 + (...) + [\delta(\gamma + \theta)]^{t_i-1} + \delta^{t_i} v_j \quad (33)$$

And because  $t_j = t_{i+1}$

$$v_j^1 - v_j = \delta^{t_i} v_j - [\delta(\gamma + \theta)]^{t_i} - \delta^{t_i+1} v_j \quad (34)$$

$$v_j^1 - v_j = (1 - \delta) \delta^{t_i} \left( v_j - \frac{(\gamma + \theta)^{t_i}}{1 - \delta} \right) \quad (35)$$

So, it can concluded that

$$\frac{(\gamma + \theta)^{t_i}}{1 - \delta} < v_j \quad (36)$$

That implies that  $v_j^1 > v_j$ . And as Basu and Emerson (2000) comment, if  $v_j^k > v_j^{k-1}$ , as  $\lim_{k \rightarrow \infty} v_j^k = v_i$ , it must be true that  $v_i > v_j$  ■

### A.2. PROOF FOR EXPRESSION 20

It was the aim to demonstrate that:

$$\text{If } i < j \text{ then } v_{(i)} > v_{(j)}$$

As already discussed,  $v_k$  has the following value:

$$v_k = 1 + \delta(\gamma + \theta) + [\delta(\gamma + \theta)]^2 + (...) + [\delta(\gamma + \theta)]^{t_k-1} + \delta^{t_k} v_k \quad (37)$$

That is,

$$(1 - \delta^{t_k})v_k = 1 + \delta(\gamma + \theta) + [\delta(\gamma + \theta)]^2 + (...) + [\delta(\gamma + \theta)]^{t_k-1} \quad (38)$$

Then, note that  $v_{(i)}$  can be expressed as follows:

$$v_{(i)} = \frac{\sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) [1 + [\delta(\gamma + \theta)] + [\delta(\gamma + \theta)]^2 + (...) + [\delta(\gamma + \theta)]^{t_k-1}]}{1 - \sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) \delta^{t_k}} \quad (39)$$

With 38 and 39 we obtain:

$$v_{(i)} = \frac{\sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) (1 - \delta^{t_k}) v_k}{1 - \sum_{k=i}^n \left( \frac{p_k}{\sum_{j=i}^n p_j} \right) \delta^{t_k}} \quad (40)$$

That after doing some algebra is exactly the expression we used for 24,

$$v_{(i)} = \frac{\sum_{k=i}^n p_k (1 - \delta^{t_k}) v_k}{\sum_{j=i}^n p_j - \sum_{k=i}^n p_k \delta^{t_k}} \quad (41)$$

$v_{(i)}$  is a weighted average of  $v_i, v_{i+1}, \dots, v_n$ . If  $j > i$  then  $v_{(i)}$  is obtained from  $v_{(j)}$  distributing the weight that  $j$  had among the rest of the values of  $v$  (i.e. for  $i, i+1, \dots, j-1$ ).

As conclusion it is found that if  $k < j$  and  $v_k > v_j$  (done in the last section), then it must follow that  $v_{(i)} > v_{(j)}$  (when  $j < i$ ) ■

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**Table 1**  
**Recent legal regimes of the tenancy contracts in Europe**

| COUNTRY                  | LAW IN FORCE IN THE PERIOD OF STUDY  | TERM  | RENT  | OTHER CLARIFICATIONS   |
|--------------------------|--|---|---|--|
| <b>Austria</b>           | ABGB (Civil Code) (1811) and MRG (1981) as special Statute   | Minimum term of 3 years   | The rent and the rent increase is thoroughly regulated. The Law sets the maximum rent at the time of conclusion of the contract. The increase in the rent is possible but has an upper bound (consumer price index)   |  |
| <b>Belgium</b>           | Statute of 1991 (comprehensive amendment in 1997)  | Minimum term of 3 years   | An index-clause can be introduced to increase the rent (although increasing it further than the "cost of living" can be declared void in court). A market rent review can take place each three years (without the risk of being declared void in court)  |  |
| <b>Denmark</b>           | Rent Act (consolidated as Act 347 of 14/05/2001). Rent Control Act (consolidated as Act 348 of 14/05/2001) | No minimum term is established by the Law although notice from the landlord to terminate the contract is subject to severe conditions. The landlord may give notice if he intends to use the apartment for himself.                                     | Increase is allowed if justified (the value of the property must be significantly higher than the rent paid in proportion to that). An increase via an "index-clause" is generally not allowed. In small multi-storey properties the rent is determined by the usual rent paid for properties of equal location, size, type, facilities and condition |  |
| <b>England and Wales</b> | Rent Act 1977. Housing Acts 1980, 1988, 1996 and Common Law.   | Several regimes are in force. From 1997 the "Assured Shorthold Tenancy" is the default form of tenancy, they can be for any length of time the parties wish to pact although the tenant has the right to stay in the property for the initial 6 months. | There is not a public general control over the increase in the rents although a specific rent increase may be submitted to control (courts, assessment committee). "Rent regulation" properly disappeared after Housing Act 1988.   | Tenancies created before 15 January 1989 are governed by Rent Act 1977. After that date (and before 28 February 1997) tenancies can be "Assured Tenancy" or "Assured Shorthold tenancy". |
| <b>Finland</b>           | Statute 482/1995. Statute 653/1987 (derogated).  | No restriction. Under previous Statutes, the grounds for eviction were strict. Although landlord's need to use the apartment for himself was a valid ground to evict.   | No restriction. Usually the rent increase is linked to the consumer price index.  | More general rent regulation existed before Statute 482/1995 such as a linkage to a public index.  |

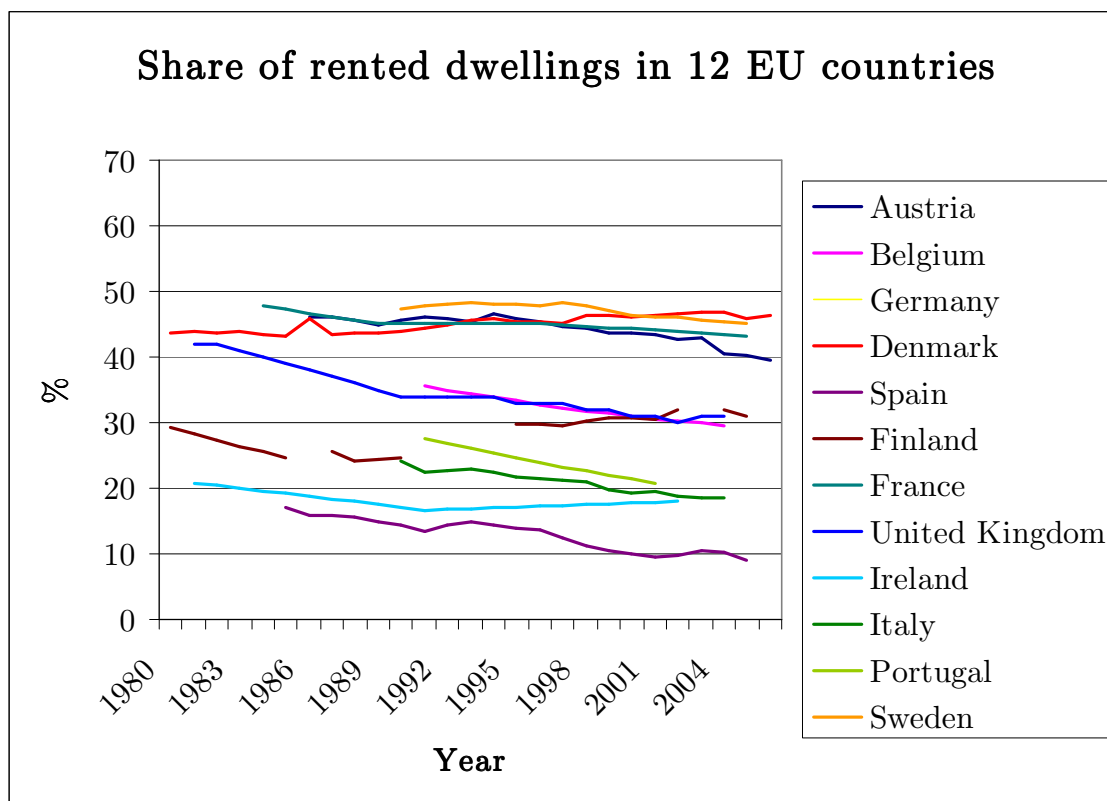


|                 |  |  |  |   |
|-----------------|--|--|--|---|
| <b>France</b>   | Mermaz act, Law 89-462 (1989)(Mermaz Act)                                | Minimum term of 3 years (if landlord is an individual)   | If the tenancy contract provides the possibility of increasing the rent, the increase cannot exceed the construction cost index (provided publicly). In case of extension, the new rent must refer to the average rent of the neighborhood.  | Previous Acts introduced similar restrictions: Law 82-526 (Quillot Act), Law 86-1290 (Quilès-Méhaignerie) |
| <b>Germany</b>  | Civil Code (BGB). Amendments of 2001 and 2002                            | The landlord has to give a reason listed in the BGB to terminate the contract  | If the rent exceeds in 20% the rent charged in comparable premises the landlord can be fined. The increases of the rent can only take place after one year of tenancy. The increase can be agreed freely or linked to a cost-of-living index. If the increase is not provided in the contract the landlord can still ask for it but it cannot exceed the customary in the area of the premise (and in any case cannot exceed 20% increase in 3 years)                              |   |
| <b>Ireland</b>  | "Common law" system plus some Statutes (Residential Tenancies Bill 2003) | No restrictions. Under the amendments of 2003 (Bill 2003) after six months of tenancy, the tenant can ask for an extension (up to 4 years) | No restrictions under the regime applicable before 2003  |   |
| <b>Italy</b>    | Law 392/1978. Reform introduced by Law 431/1998                          | Minimum term of 4 years  | Before 1998 the rent and rent increase was regulated. From 1998 there is no regulation on this respect (rent increases can be freely updated by agreement of landlord and tenant)  |   |
| <b>Portugal</b> | Civil Code (1966). Decree-Law 321-B/1990.                                | Minimum term of 5 years  | The parties can choose between a "free rent regime" or a "conditioned rent regime". Free regime: the rent and the increases are freely agreed. Although in the residence tenancy (in contracts up to 8 years) the increase is regulated (only increases related to the consumer price index). Conditioned regime: the rent is set by the Law (that takes into account the average rents of similar premises). The conditioned regime can be mandatory under certain circumstances. | A new Law (6/2006) has been recently passed.  |

|               |  |  |   |  |
|---------------|--|--|---|--|
| <b>Spain</b>  | Royal Decree-Law 2/1985. Law 29/1994 (Urban Tenancy Act).      | Minimum term of 5 years (Law 29/1994).   | During the 5 years the only rent increase allowed is the inflation  | Under Royal Decree-Law 2/1985 (between 1985 and 1995) there was no compulsory extension of the contracts |
| <b>Sweden</b> | Special Tenancy act (1968), introduced in the Land Code (1970) | No minimum term established by the Law. Although the Law establishes a strict regime for the landlord: the need of the apartment for the use of the landlord is not a sufficient ground to terminate the contract. | Prices are normally determined by collective bargaining by associations. The courts do some rent control. |  |

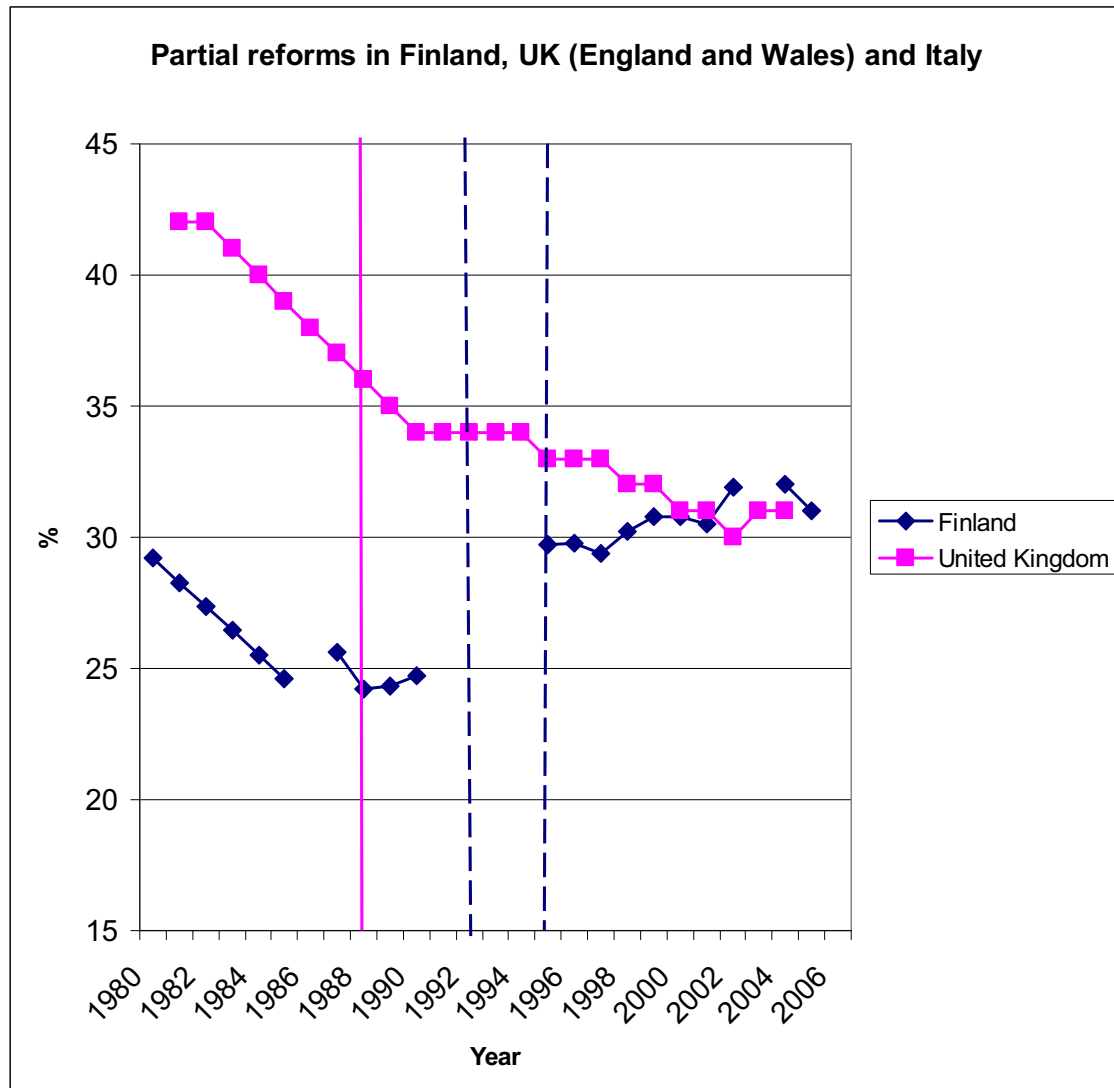
Sources: National Legislations and Government Law databases, EUI Tenancy Law Project, GlobalPropertyGuide.com.

Figure 1



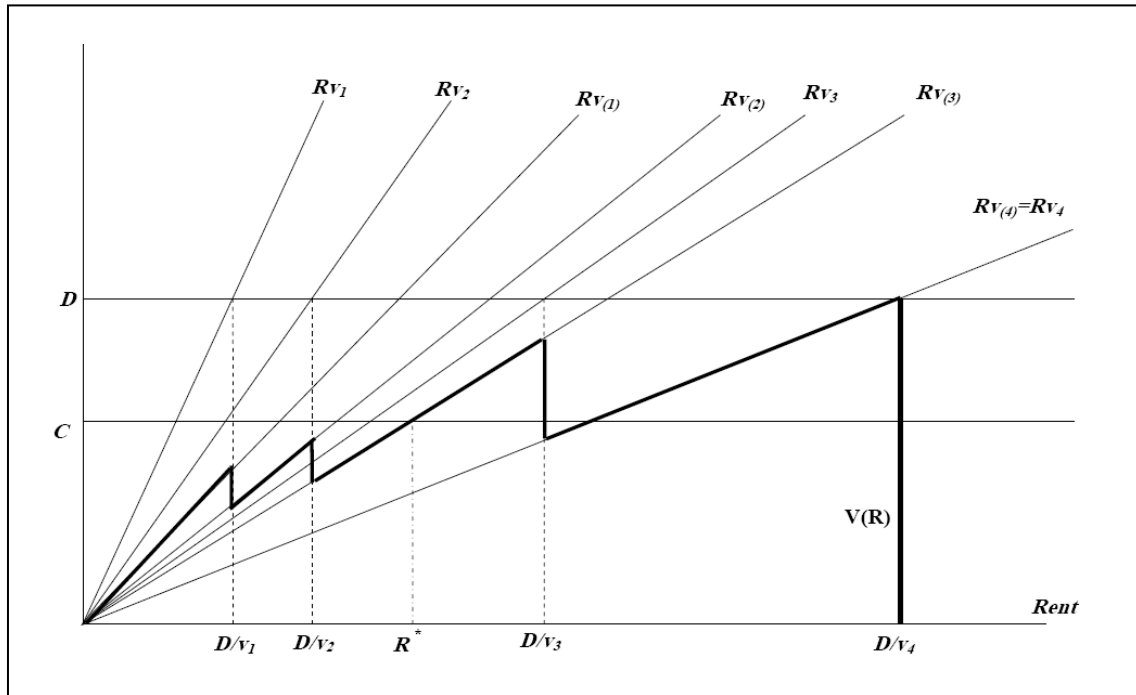
Sources: Censuses (National Statistics Institutes) and ECB Statistical Data Warehouse.

Figure 2

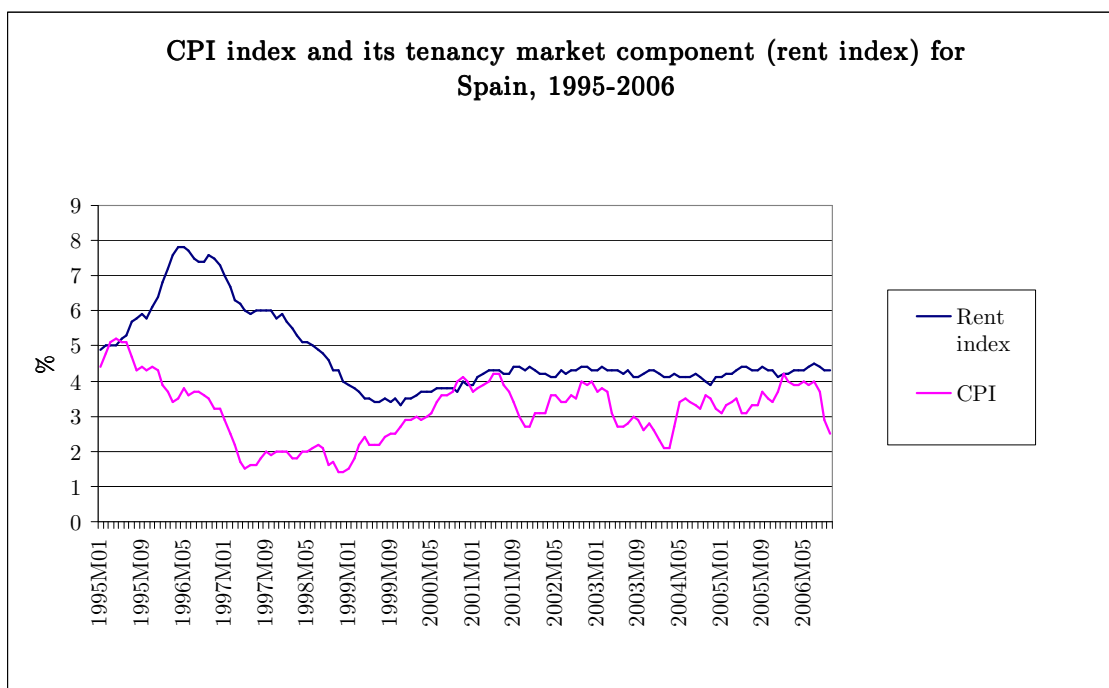


Sources: Censuses (National Statistics Institutes) and ECB Statistical Data Warehouse.

Figure 3  
Equilibrium with four types of tenants



**Figure 4**



Source: INE (Spanish National Statistics Institute).

Figure 5

Effects of a reduction in the protection term

